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Reply to Office Action dated 22 January 2004

### AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listing of claims in the application:

#### LISTING OF CLAIMS:

Claims 1 – 3 (Cancelled).

Claim 4 (Currently amended) ~~A The material delivery system of Claim 1,~~  
wherein for miniature structures fabrication, comprising:

a substrate;

a material carrier element having a deposition layer disposed thereon  
and displaceable with respect to said substrate, said deposition layer containing at  
least one depositable material, said material carrier element is being maintained in  
predetermined spaced relationship with regard respect to said substrate.

An energy beam directed towards said material carrier element; and  
control means operatively coupled to said energy beam and said  
material carrier element for changing relative position between said material  
carrier element and said energy beam, thereby exposing respective areas of said  
deposition layer to said energy beam in a patterned fashion, said at least one  
depositable material being ablated from said respective areas of said deposition  
layer upon exposure to said energy beam, transferring to said substrate for

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depositing thereon at regions thereof corresponding to said respective areas of said deposition layer on said material carrier element.

Claim 5 (Original) The material delivery system of Claim 4, wherein a distance between said material carrier element and said substrate does not exceed 25  $\mu\text{m}$ .

Claim 6 (Currently amended) The material delivery system of Claim [[1]] 4, wherein said control means scan said energy beam over said material carrier element.

Claim 7 (Currently amended) ~~A~~ The material deliver system of Claim 1,  
wherein for miniature structures fabrication, comprising:

a substrate;

a material carrier element having a deposition layer disposed thereon and displaceable with respect to said substrate, said deposition layer containing at least one depositable material;

an energy beam directed towards said material carrier element; and  
control means operatively coupled to said energy beam and said material carrier element for changing relative position between said material carrier element and said energy beam, thereby exposing respective areas of said

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deposition layer to said energy beam in a patterned fashion, said at least one depositable material being ablated from said respective areas of said deposition layer upon exposure to said energy beam, transferring to said substrate for depositing thereon at regions thereof corresponding to said respective areas of said deposition layer on said material carrier element, said control means manipulates manipulating said material carrier element with respect to said energy beam.

Claim 8 (Currently amended) Δ The material delivery system of Claim 1,  
wherein for miniature structures fabrication, comprising:

a substrate;

a material carrier element having a deposition layer disposed thereon and displaceable with respect to said substrate, said deposition layer containing at least one depositable material, said deposition layer of said material carrier element includes including a plurality of distinct depositable materials disposed at predetermined zones on said material carrier element; [[.]]

an energy beam directed towards said material carrier element; and

control means operatively coupled to said energy beam and said material carrier element for changing relative position between said material carrier element and said energy beam, thereby exposing respective areas of said deposition layer to said energy beam in a patterned fashion, said at least one depositable material being ablated from said respective areas of said deposition

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layer upon exposure to said energy beam, transferring to said substrate for depositing thereon at regions thereof corresponding to said respective areas of said deposition layer on said material carrier element.

Claim 9 (Currently amended) The material delivery system of Claim 8, wherein said control means aligns said energy beam with a respective one of said predetermined zones for depositing of a required depositable material contained in said respective zone.

Claim 10 (Currently amended) The material delivery system of Claim [[1]] 4, wherein said control means controls a size of cross-section of said energy beam.

Claim 11 (Currently amended) The delivery system of Claim [[1]] 4, wherein said control means controls a shape of cross-section of said energy beam.

Claim 12 (Currently amended) The material delivery system of Claim [[1]] 4, wherein said energy beam includes a laser beam.

Claim 13 (Original) The material delivery system of Claim 12, wherein said laser beam includes an ultraviolet laser beam.

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Claims 14 – 15 (Cancelled).

Claim 16 (Original) The material delivery system of Claim 13, wherein said material carrier element is transparent to the ultraviolet radiation.

Claim 17 (Currently amended) A The material delivery system of Claim 1,  
wherein for miniature structures fabrication, comprising:

a substrate;

a material carrier element having a deposition layer disposed thereon  
and displaceable with respect to said substrate, said deposition layer containing at  
least one depositable material;

an energy beam directed towards said material carrier element; and  
control means operatively coupled to said energy beam and said  
material carrier element for changing relative position between said material  
carrier element and said energy beam, thereby exposing respective areas of said  
deposition layer to said energy beam in a patterned fashion, said at least one  
depositable material being ablated from said respective areas of said deposition  
layer upon exposure to said energy beam, transferring to said substrate for  
depositing thereon at regions thereof corresponding to said respective areas of said  
deposition layer on said material carrier element, said control means operates

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operating said material delivery system in either of a direct write mode of operation and a micromachining mode of operation, said material carrier element being positioned ~~in said~~ in said direct write mode of operation in interception with said energy beam, and said material carrier element being displaced in said micromachining mode of operation away from intercepting with said energy beam, thus allowing a direct access for said energy beam to said substrate for ablating said substrate in a patterned fashion.

Claim 18 (Original) The material delivery system of Claim 17, wherein in said micromachining mode of operation, a fluence of said energetic beam is at least  $1\text{J}/\text{CM}^2$  for ablating said substrate in said patterned fashion.

Claim 19 (Original) The material delivery system of Claim 4, further comprising a substrate-holding unit supporting said substrate in substantially parallel relationship to said material carrier element.

Claim 20 (Currently amended) A ~~The~~ material delivery system of Claim 1, ~~wherein~~ for miniature structures fabrication, comprising:

a substrate;

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a material carrier element having a deposition layer disposed thereon and displaceable with respect to said substrate, said deposition layer containing at least one depositable material, said material carrier element includes including:

(a) a disc material carrier element, ~~said material delivery system further including~~

(b) an air table having a plurality of orifices, and

© a gas supply means forcing said gas through said orifices, whereby a gas cushion layer is created above said air table, said disc material carrier element being supported upon said gas cushion layer in rotational relationship therewith about an axis of rotation extending through the center of said disc material carrier element; [[.]]

an energy beam directed towards said material carrier element; and control means operatively coupled to said energy beam and said material carrier element for changing relative position between said material carrier element and said energy beam, thereby exposing respective areas of said deposition layer to said energy beam in a patterned fashion, said at least one depositable material being ablated from said respective areas of said deposition layer upon exposure to said energy beam, transferring to said substrate for depositing thereon at regions thereof corresponding to said respective areas of said deposition layer on said material carrier element.

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Claim 21 (Original) The material delivery system of Claim 20, wherein said disc material carrier element is rotated at a rate determined by said energy beam repetition rate and a distance of said energy beam from said axis of rotation for arranging said respective areas of said deposition layer exposed to said energy beam in a substantially close-packed manner.

Claim 22 (Original) The material delivery system of Claim 20, wherein said disc material carrier element is slidably displaceable substantially in parallel with respect to said substrate and independently thereof.

Claim 23 (Original) The material delivery system of Claim 20, wherein said substrate is independently displaceable substantially in parallel relation with respect to said disc material carrier element.

Claim 24 (Currently amended) The material delivery system of Claim [[1]]  
4, wherein said control means further includes pulse-position synchronization means for coordination between events of exposure of said deposition layer to said energy beam and the relative disposition of said material carrier element, said substrate and said source of energy.



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Claim 25 (Original) The material delivery system of Claim 8, wherein said predetermined zones of said plurality of materials of said deposition layer are arranged in multiple annular manner.

Claim 26 (Currently amended) The material delivery system of Claim [[1]]  
4, wherein said material carrier element includes a tape material carrier element, said system further includes:

a take-up reel and a supply reel supporting said tape material carrier element at two opposing ends thereof in a lengthwise slidable relationship with respect to said substrate, and

a tape guide unit disposed between said take-up reel and said supply reel and maintaining said tape material carrier element in predetermined relative disposition with respect to said substrate.

Claim 27 (Original) The material delivery system of Claim 26, further including:

an actuator block operatively coupled to said tape guide unit for stepping said tape material carrier element in a direction substantially normal to said tape material carrier element travel and in parallel to said substrate forming a deposition layer in multiple parallel tracks fashion.

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Claim 28 (Currently amended)  $\Delta$  ~~The material delivery system of Claim 26, wherein~~ for miniature structures fabrication, comprising:

a substrate;

a material carrier element having a deposition layer disposed thereon and displaceable with respect to said substrate, said deposition layer containing at least one depositable material, said material carrier element including a tape material carrier element;

a take-up reel and a supply reel supporting said tape material carrier element at two opposing ends thereof in a lengthwise slidable relationship with respect to said substrate, said lengthwise slidable motion of said tape material carrier element with respect to said substrate is being a bidirectional motion; [[.]]

a tape guide unit disposed between said take-up reel and said supply reel and maintaining said tape material carrier element in predetermined relative disposition with respect to said substrate;

an energy beam directed towards said material carrier element; and

control means operatively coupled to said energy beam and said material carrier element for changing relative position between said material carrier element and said energy beam, thereby exposing respective areas of said deposition layer to said energy beam in a patterned fashion, said at least one depositable material being ablated from said respective areas of said deposition

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layer upon exposure to said energy beam, transferring to said substrate for depositing thereon at regions thereof corresponding to said respective areas of said deposition layer on said material carrier element.

Claim 29 (Currently amended) A The material delivery system of Claim 27, wherein for miniature structures fabrication, comprising:

a substrate;

a material carrier element having a deposition layer disposed thereon and displaceable with respect to said substrate, said deposition layer containing at least one depositable material, said material carrier element including a tape material carrier element;

a take-up reel and a supply reel supporting said tape material carrier element at two opposing ends thereof in a lengthwise slidable relationship with respect to said substrate;

a tape guide unit disposed between said take-up reel and said supply reel and maintaining said tape material carrier element in predetermined relative disposition with respect to said substrate;

an actuator block operatively coupled to said tape guide unit for stepping said tape material carrier element in a direction substantially normal to said tape material carrier element travel and in parallel to said substrate forming a deposition layer in multiple parallel tracks fashion, each said stepping of said tape

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material carrier element in the multiple parallel ["] tracks ["] fashion is carried out after a full length of said tape material element has passed in a predetermined direction of the lengthwise motion thereof; [.]

an energy beam directed towards said material carrier element; and  
control means operatively coupled to said energy beam and said  
material carrier element for changing relative position between said material  
carrier element and said energy beam, thereby exposing respective areas of said  
deposition layer to said energy beam in a patterned fashion, said at least one  
deposable material being ablated from said respective areas of said deposition  
layer upon exposure to said energy beam, transferring to said substrate for  
depositing thereon at regions thereof corresponding to said respective areas of said  
deposition layer on said material carrier element.

Claim 30 (Currently amended) A The material delivery system of Claim  
27, wherein for miniature structures fabrication, comprising:

a substrate;  
a material carrier element having a deposition layer disposed thereon  
and displaceable with respect to said substrate, said deposition layer containing at  
least one deposable material, said material carrier element including a tape  
material carrier element;

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a take-up reel and a supply reel supporting said tape material carrier element at two opposing ends thereof in a lengthwise slidable relationship with respect to said substrate;

a tape guide unit disposed between said take-up reel and said supply reel and maintaining said tape material carrier element in predetermined relative disposition with respect to said substrate;

an actuator block operatively coupled to said tape guide unit for stepping said tape material carrier element in a direction substantially normal to said tape material carrier element travel and in parallel to said substrate forming a deposition layer in multiple parallel tracks fashion, each of said parallel ["] tracks ["] contains a respective one of a plurality of depositable materials; [.]

an energy beam directed towards said material carrier element; and

control means operatively coupled to said energy beam and said material carrier element for changing relative position between said material carrier element and said energy beam, thereby exposing respective areas of said deposition layer to said energy beam in a patterned fashion, said at least one depositable material being ablated from said respective areas of said deposition layer upon exposure to said energy beam, transferring to said substrate for depositing thereon at regions thereof corresponding to said respective areas of said deposition layer on said material carrier element.

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Claim 31 (New) The material delivery system of Claim 4, further comprising a tape guide unit supporting said material carrier element in said predetermined spaced relationship with respect to said substrate.